

Fig. 1

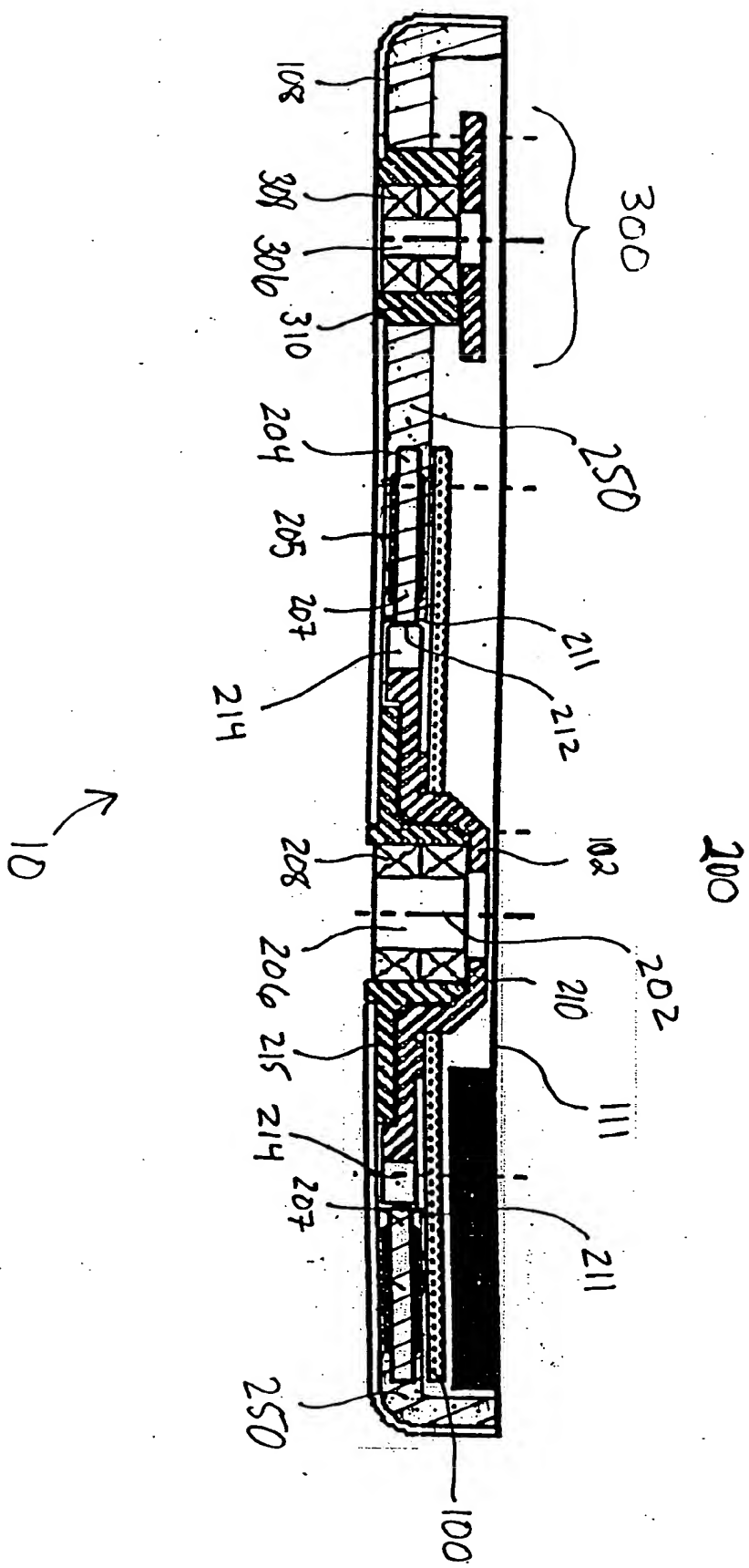


FIG. 2

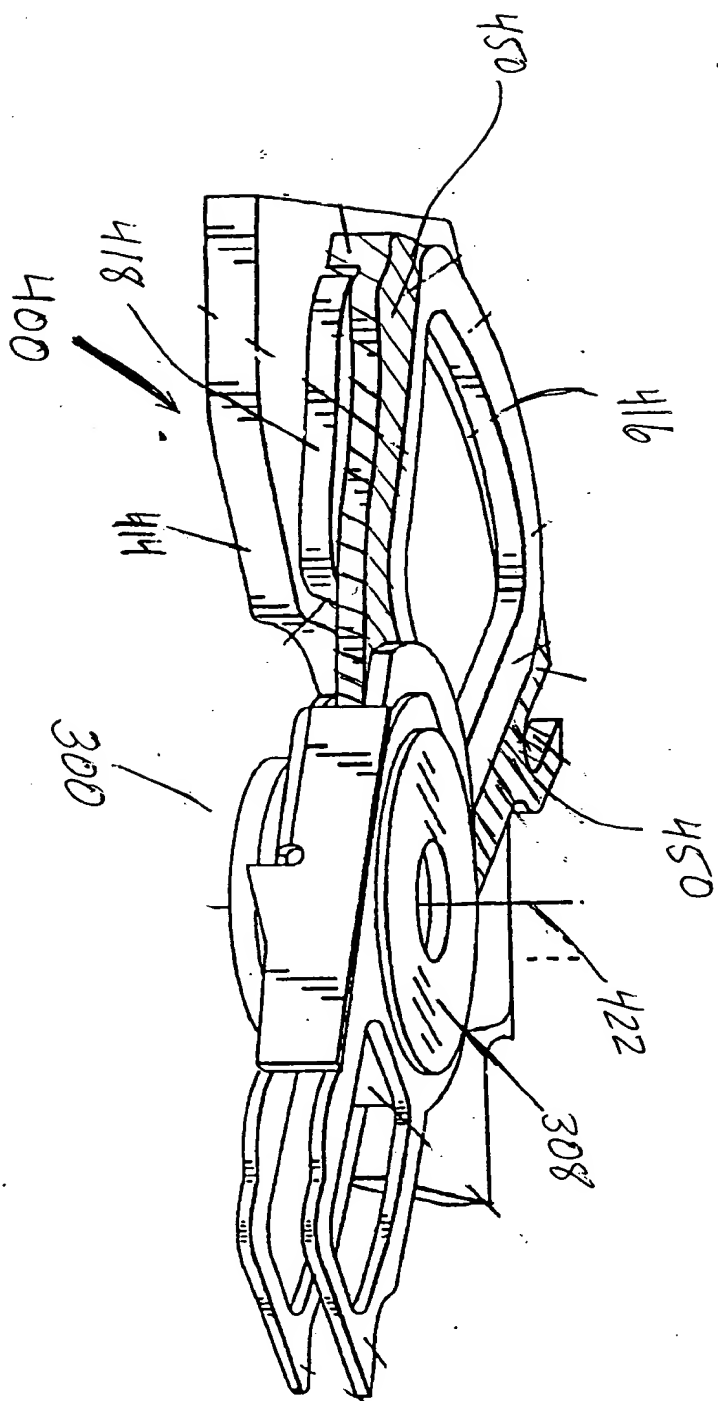
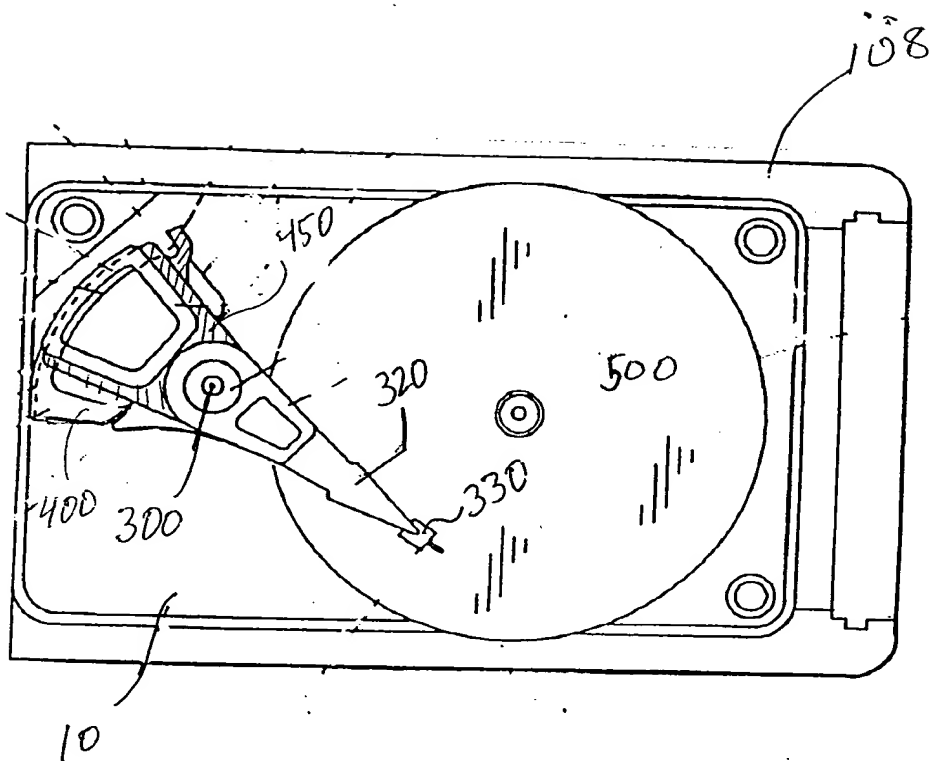


FIG. 3



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FIG. 4a

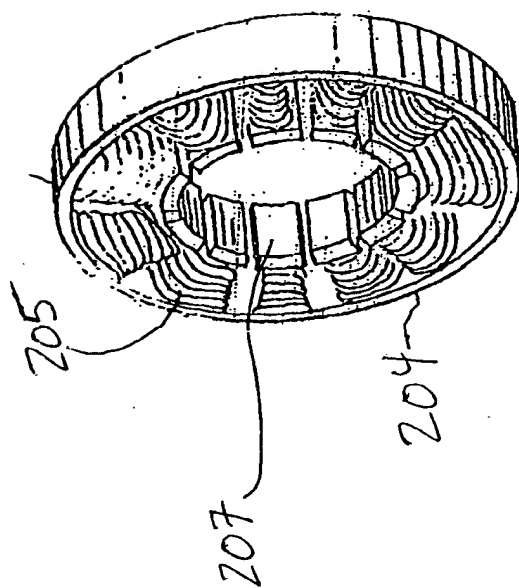


FIG. 4b

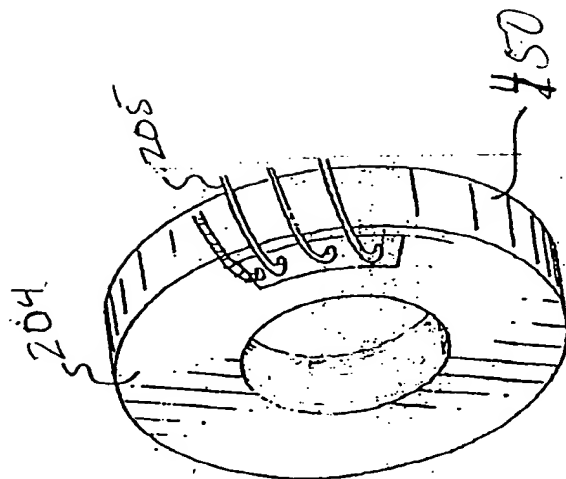
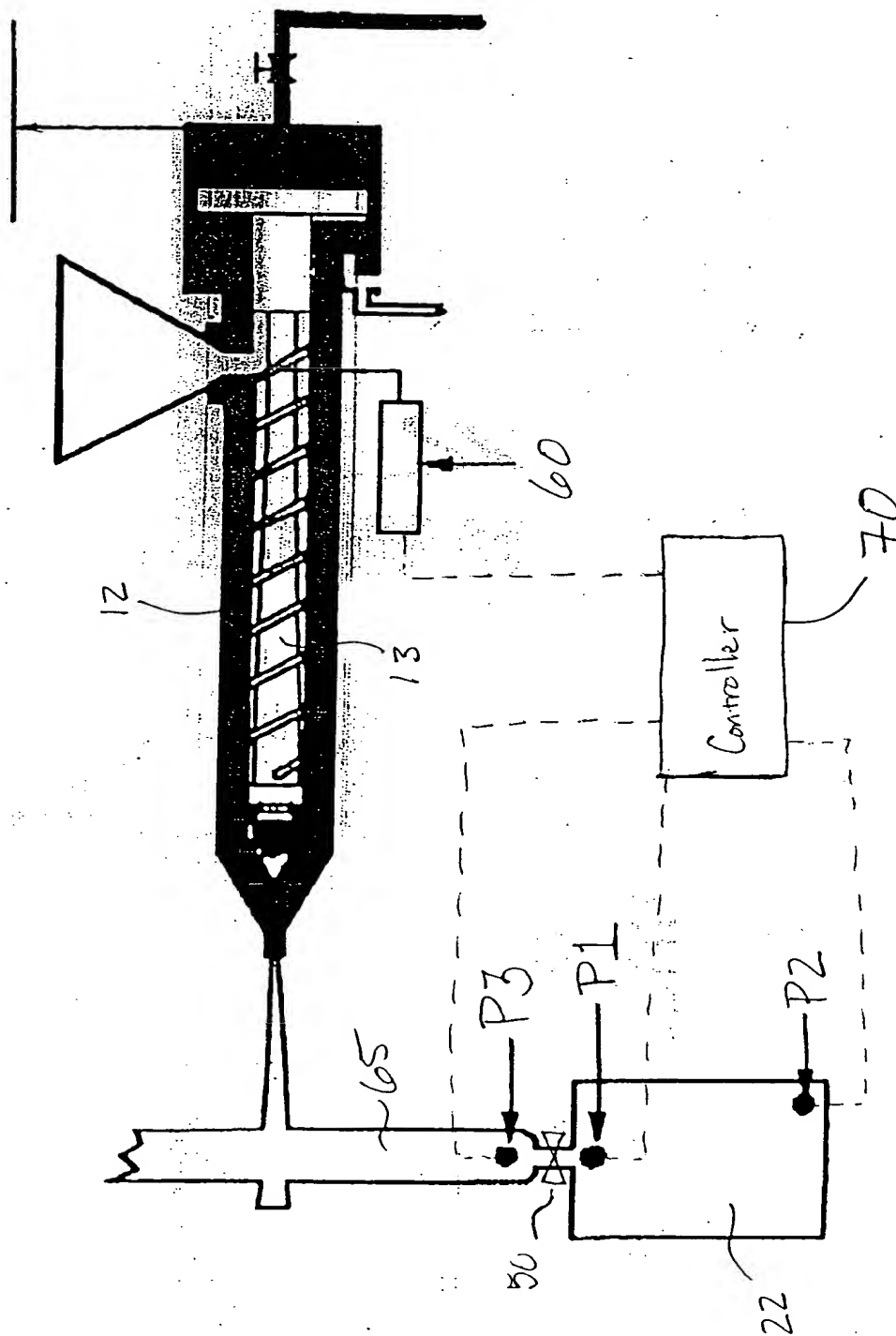


FIG. 5



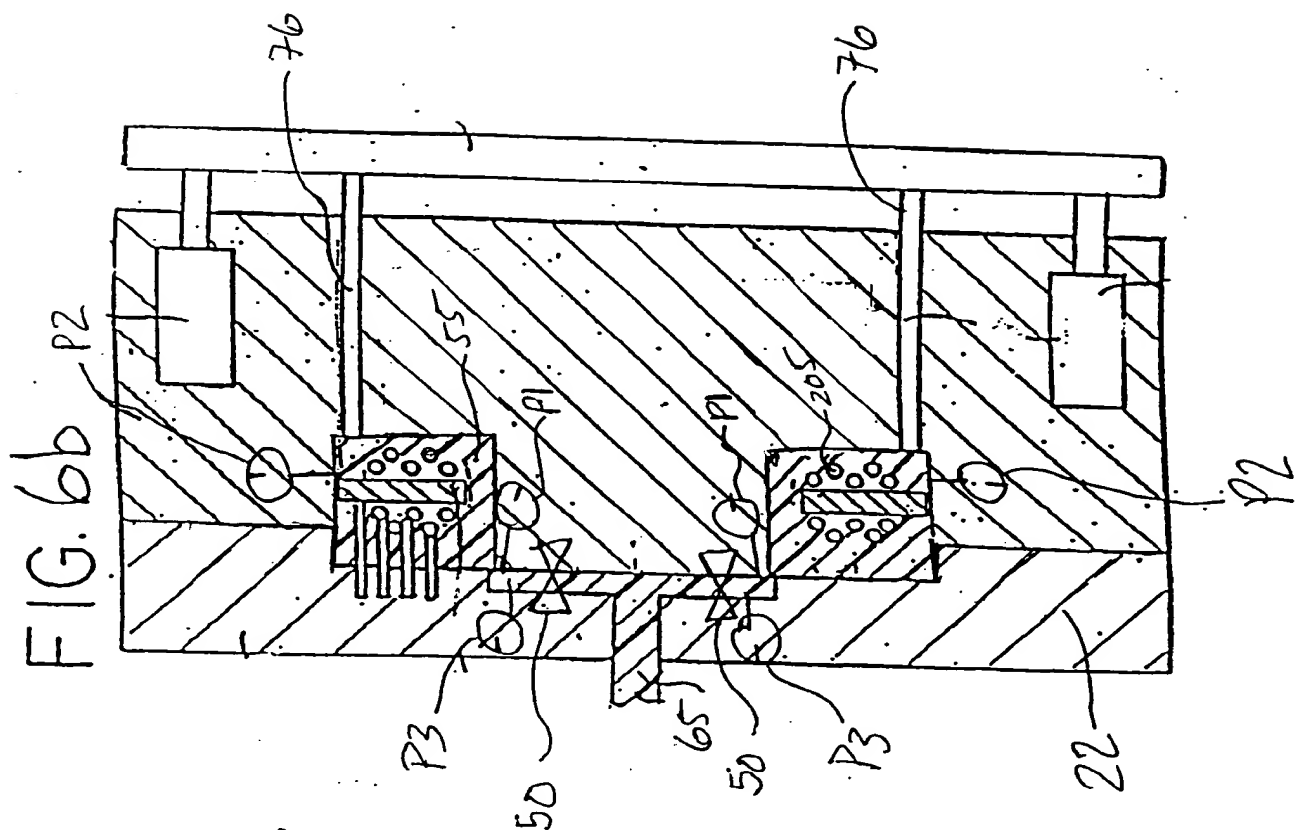
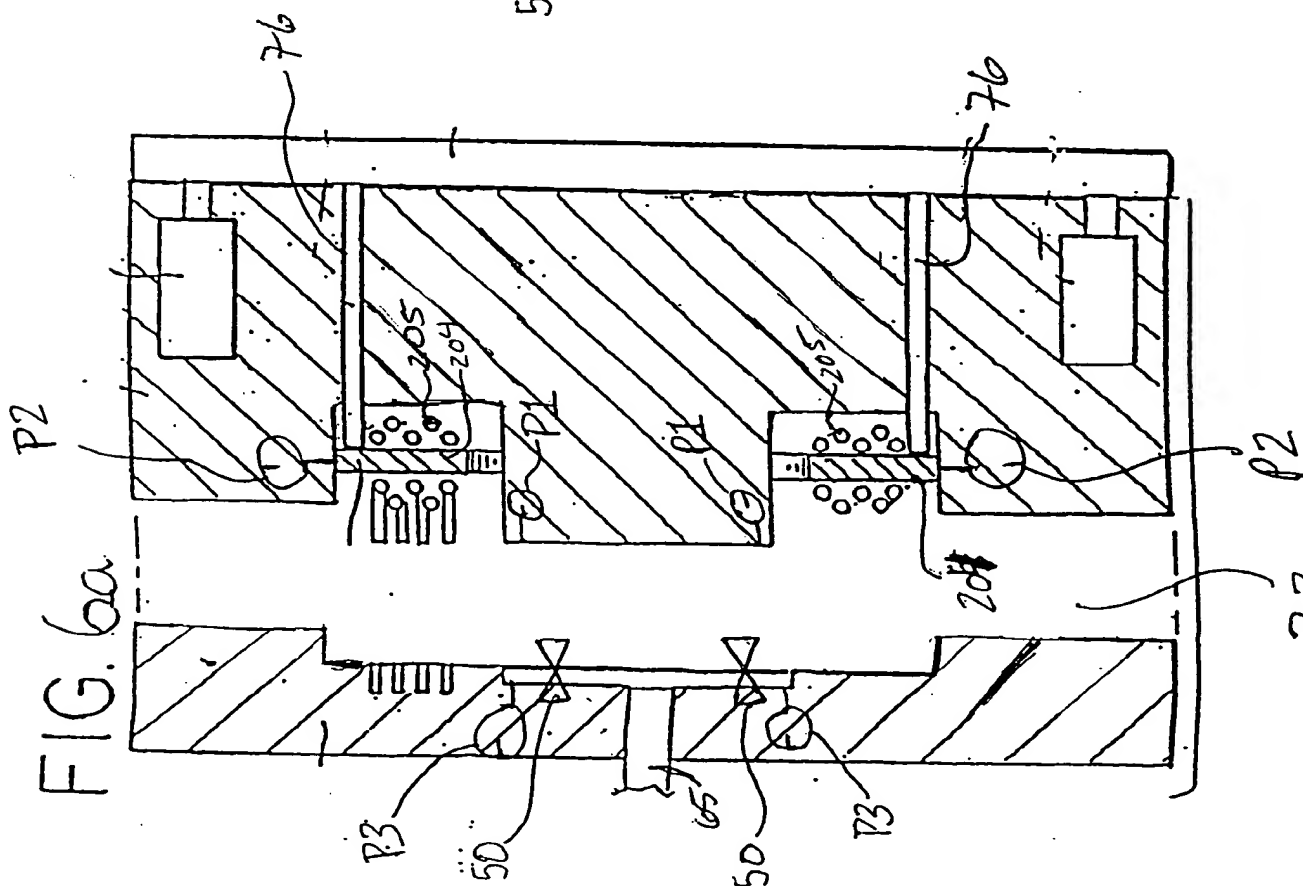
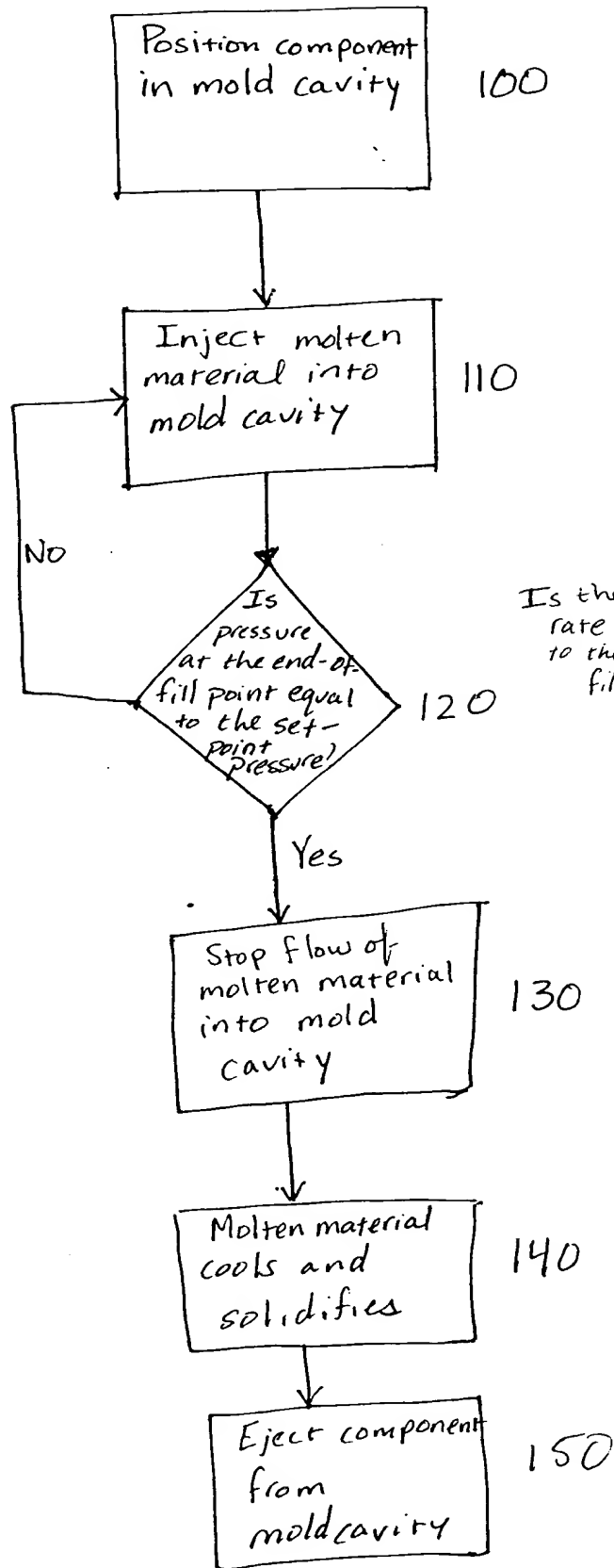


Fig. 7



Is the fill rate equal to the setpoint fillrate

Is the pressure at the beginning of fill point equal to the set point beginning of fill pressure

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FIG. 8

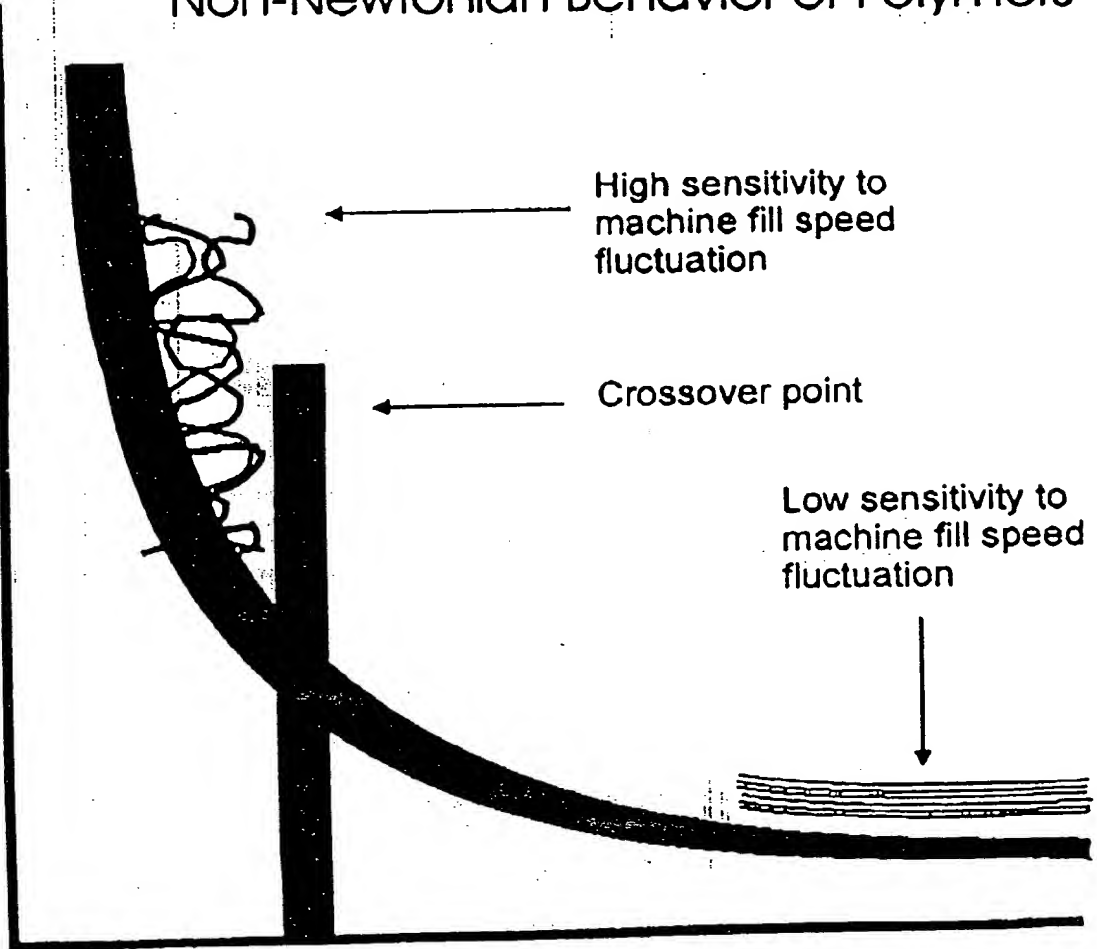
Non-Newtonian Behavior of Polymers

THICK



VISCOSITY

THIN



High sensitivity to machine fill speed fluctuation

Crossover point

Low sensitivity to machine fill speed fluctuation

SLOW

FLOW RATE



FAST

More Consistent Plastic Pressure in the Mold

Fig. 9a

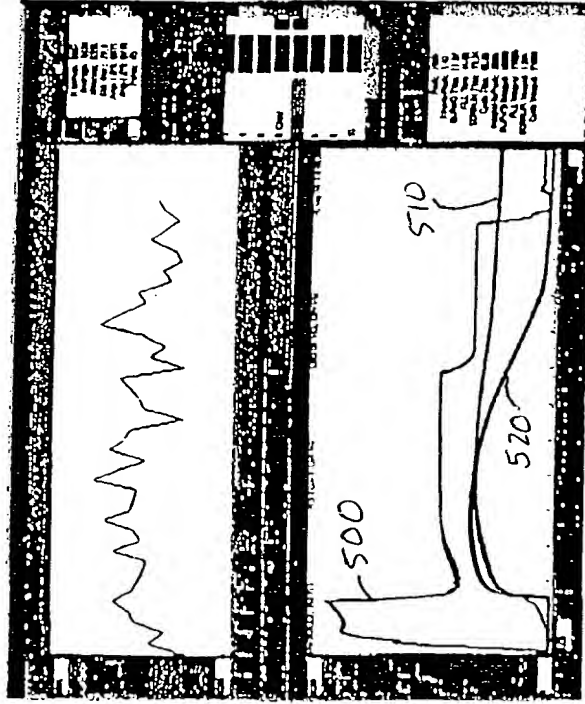


Fig. 9b

Without Control

Fig. 9c

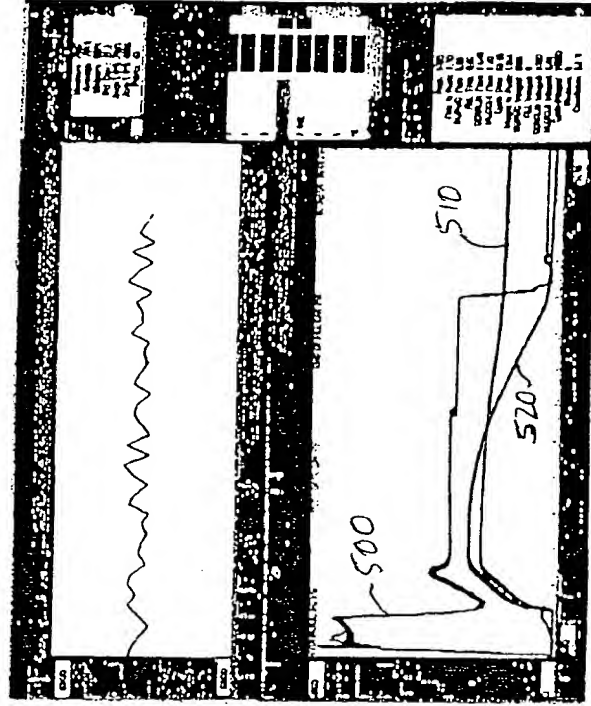


Fig. 9d

With Control

FIG. 9

FIG. 10

Table I

SAMPLE VOICE COIL MOTORS		
	Sample	Resonance (Hertz)
End-of-Fill Cavity Pressure 4400-4499 psi	1	9,240
	2	9,272
	3	9,248
	4	9,256
	5	9,288
	6	9,296
	7	9,296
Average		9,271
Max		9,296
Min		9,240
Sigma		23
End-of-Fill Cavity Pressure 4500-4700 psi	1	9,288
	2	9,304
	3	9,280
	4	9,256
	5	9,280
	6	9,320
	7	9,256
	8	9,304
	9	9,288
	10	9,288
	11	9,248
	12	9,280
	13	9,288
	14	9,280
Average		9,283
Max		9,320
Min		9,248
Sigma		20
End-of-Fill Cavity Pressure 4701-4800 psi	1	9,296
	2	9,248
	3	9,312
	4	9,296
Average		9,288
Max		9,312
Min		9,248
Sigma		28

FIG. 10